

REMARKS

Claims 22-26 are currently pending in the application. Only claim 22 is in independent form.

Claims 22-26 stand rejected under 35 U.S.C. § 102(b) as being anticipated by or, in the alternative, under 35 U.S.C § 103(a) as being obvious over E.P.439898. Reconsideration of the rejection is respectfully requested.

This issue of the present rejection is whether the hose of the present invention is identical to that of the prior art. The prior art hoses did not provide sufficient strength for the consumers using the products. There was therefore a need to develop a better hose than those already available.

The Office Action states that the cited reference taught that one skilled in the art would provide a hose with a braided glass fiber thereon. Prior to the application of the glass fiber onto the tubing, the reference suggested that one skilled in the art would have applied a fluoropolymeric dispersion onto the glass fibers employed in the braid. By performing this step, the finished tubing was provided with a dispersion that was completely coated and embedded in the glass fiber braid disposed about the extruded tubing. The Office Action states that while the pending claims at hand recite two separate dispersion coating operations, there is no reason to believe that the product produced by this process would have been any different from the product made by E.P.'898. However, it is respectfully submitted that the hose of the presently pending independent claims does provide a very different product than that which would be found using the E.P. method. The benefit a hose assembly formed via dipping the single fiber as taught by the cited European patent application is that the fiber has greater strength. In contradistinction, the benefit of the "double dipped" hose of the presently pending independent claims is that there is a greater bond strength between the braided layer and the inner liner. Further, as stated in the Office Action, the purpose of the coating of the braid was to fully immerse the fluoropolymer into the fibers of the braid. This is not

required by the present invention which instead requires that there be a full bond between the braid and the inner liner. This is found in the "double dipped" hose that includes two dipping processes occur. This "double dipping" hose has less variations in the strength of the bond as is more flexible than the hose of the cited European patent application.

Further, it has been determined that predipping thread made the thread more rigid and the resulting hose more rigid because the whole thread serves as an anchor point. In other words, the entire piece of thread is attached to the inner liner. When forming the hose using the dipping method, only the interstitial spaces form the anchor points, thus more flexibility is created because the entire braid is not rigidly affixed to the inner surface of the hose. By making the entire piece of thread an anchor, this prior art hose is a rigid hose that is prone to kinking and thus causes more problems. It is well known to those of skill in the art that kinking in the hose assembly is not beneficial because any kinks in the hose may cause an increase in electrical charge within the fuel line. Previously, another company was manufacturing a hose assembly that included predipped thread that formed a braid that was placed on an inner liner. The problem with this material is that it was prone to kinking and thus was not a beneficial product. The benefit of the presently claimed hose assembly is that it is not prone to kinking because the anchor points are only at the interstitial spaces. This is a benefit that makes the hose very different from that of the prior art. The hose assembly of the presently pending independent claims claim that the dispersion fills in gaps between adjacent fibers. This shows that the dispersion is used to form anchor points at the interstitial spaces. This is not disclosed or suggested in the cited prior art. In fact, the cited prior art does not disclose that any dispersion would fill in the gaps between the spaces of the thread or the use of such a dispersion to rigidly affix the braid to the inner liner.

As stated in the previously submitted Affidavit of Normal Martucci, one of the co-inventors of the present invention skilled in the art of making such devices and the methods of making the same, the "double dip" method (method of the present invention) provides results that were unexpected over the results obtained by the "single dip" method as disclosed in the E.P. patent. Mr. Martucci stated that the "single dip" method

produced a higher bond strength between the fiber glass outer braid and the Teflon inner tube while the "double dip" method unexpectedly produced less variation in the strength of the bond and was more flexible than the "single dip" hose. Hence, the "double dip" method and device provided results different from those obtained by the "single dip" method and resulting device. Such results are not at all disclosed or even suggested in the reference. Hence, these results are *de facto* unexpected results.

Moreover, as testified to in the Martucci Affidavit, it is the unexpected different results obtained by the "double dip" method of the present invention that was most desirable to the auto industry. It is the "double dip" method that has become the significant commercial embodiment between the two inventions. That is, for fuel line hoses, the automobile industry favored the lesser variation of strength of the bond and more flexibility obtained by the present invention than by the "single dip" hose. Hence, Applicants present herewith factual evidence of unexpected results of the present invention over the most pertinent prior art cited, as well as commercial success based upon those unexpected results.

Additionally, as is shown in the previously submitted information provided by Chrysler, Ford, and GM, less variation is in fact of substantial significance. There are specific procedures that must be followed prior to accepting new processes by these motor companies. More specifically, while the use of the "single dip" method which has a higher standard deviation is allowed, there is no indication that using the "double dip" method would provide less variation in the strength of the bond and also provide more flexibility. Therefore, there is no indication that by merely adding additional material, as in the "double dip" process that the new hose will be more flexible or have less standard deviation. Instead, in order for the motor companies to utilize this material, it must pass through a series of tests and be provided with sufficient data to meet the statistical process control standards. The statistical data requirements and the testing that is done is included in the attached material from the motor companies. This material also provides support for the allegation of additional commercial success. Since the "double dip" process has less standard deviation and is more flexible, it is more likely to be used

by the major motor companies because it will pass the more stringent quality control standards. Given this explicit teaching, there is no disclosure or suggestion for the use of a "double dip" process which creates less standard deviation with greater flexibility in a hose assembly.

Claims 22-26 stand rejected under 35 U.S.C. 103(a), as being unpatentable over E.P. 380,841 in view of any one of Arterburn, Busdiecker, Haren, Mathews, Gray et al., or Brumbach optionally further taken with Green. Reconsideration of the rejection under 35 U.S.C. §103(a) over E.P. 380,841 in view of any one of Arterburn, Busdiecker, Haren, Mathews, Gray et al., or Brumbach optionally further taken with Green., as applied to the claims is also respectfully requested.

The Office Action states that E.P. 380,841 taught that it was known at the time the invention was made to form a fluorocarbon tubular core member and braid upon the same. The Office Action states that it was notoriously well known in the braiding art to apply a coating to a tube prior to braiding followed by an application of the second coating in order to ensure complete encapsulation of the braided material within the coating material as evidenced by Arterburn, Busdiecker, Haren, Mathews, Gray et al., or Brumbach. However, when read more specifically, the Brumbach patent discloses using multiple layers of adhesive because more than one braided layer was utilized and in order for the braided layers to be affixed to one another, adhesives were required. Again in the Arterburn patent there is disclosed multiple layers of braiding for reinforcement of the tube. It is obvious to utilize multiple layers of adhesive because multiple braiding layers are used. Absent the use of multiple layers of braiding there would be no need for multiple layers of adhesive because a single braided layer only needs to be affixed to a single inner liner.

In the Mathews patent there is disclosed encapsulating the fibers of the braided material, braiding that material, and then utilizing an encapsulating adhesive material about the braid to affix the braided layer to the inner liner. However, there is no disclosure of the "double dip" method of the present invention. In the Haren and Gray et al. patents,

there are disclosed the use of multiple layers of adhesive because more than one braided layer was utilized and in order for the braided layers to be affixed to one another, adhesives were required; and multiple layers of braiding were required for reinforcement of the tube. It is obvious to utilize multiple layers of adhesive because multiple braiding layers are used. Absent the use of multiple layers there would be no need for multiple layers of adhesive because a single braided layer only needs to be affixed to a single inner liner. Therefore, it has been shown that it is clearly known to those of skill in the art that when multiple layers of braiding are utilized that multiple layers of adhesive must be used to adhere braided layers to the previous layers. There is no disclosure in any of the prior art patents for using more than one layer of adhesive for affixing a single braided layer.

Further, the Green patent specifically states that a single dip is utilized wherein the inner liner is dipped through material and then the glass fibers of a braid are added about the dispersion. The assembly is then heated to remove fluid and there is created a sufficiently cured fluorocarbon polymer material containing thereabout a braided layer. This precisely what has been repeatedly taught in the prior art, that a single layer of dispersion can be used to apply a braided layer to an inner liner. There is no teaching in the prior art that multiple layers of the dispersion need to be applied when a single braided layer is used in a hose assembly. The present invention discloses that remarkably, the use of a "double dip" method as is disclosed and claimed, provides better bond strength and better flexibility of the hose. This is unexpected because it was common knowledge to those of skill in the art that the single dipping method would provide sufficient adherence of the braided layer to the inner liner. It is not known to those of skill in the art to utilize the "double dip" method. Instead, it was well known to those of skill in the art to use a single adhesive layer to apply a single braided layer to an inner liner. Multiple layers of adhesive were only utilized when more than one layer of braiding was applied to the hose. As stated in all of the prior art patents, multiple adhesives were utilized when a multiple braiding layers were applied. For example, if two layers of braiding were utilized, two layers of adhesive were utilized to affix the braids to the underlayers. There is no disclosure in any of the prior art patents to use an additional

layer on top of the adhesive layers for affixing all of the braids to the inner hose. Since none of the prior art patents, alone or in combination, teach or suggest the hose assembly of the present invention, the present invention is patentable over the prior art, and reconsideration of the rejection is respectfully requested.

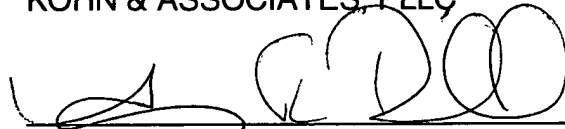
The remaining dependent claims not specifically discussed herein are ultimately dependent upon the independent claims. References as applied against these dependent claims do not make up for the deficiencies of those references as discussed above, the prior art references do not disclose the characterizing features of the independent claims discussed above. Hence, it is respectfully submitted that all of the pending claims are patentable over the prior art.

In view of the present amendment and foregoing remarks, reconsideration of the rejections and advancement of the case to issue are respectfully requested.

The Commissioner is authorized to charge any fee or credit any overpayment in connection with this communication to our Deposit Account No. 11-1449.

Respectfully submitted,

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Angel Webb